



MEMO

TO: Jean Francois Latour, Barry Needleman

FROM: Dana Lodico, P.E., INCE Bd. Cert.
Ken Kaliski, P.E., INCE Bd

DATE: March 5, 2021

SUBJECT: Summary of Noise Ordinances Referred to in Letter from Lisa Linowes (August 18, 2020)

At your request, we have researched the number of wind turbines in each of the counties Lisa Linowes mentions in her letter to the SEC of August 18, 2020.

Dallas County, IA (adopted 9/3/2019)

11. Noise. Audible noise due to C-WECS sites operation shall not exceed 30dBA for any period of time, when measured at any dwelling, school, hospital, church, or public library existing on the date of approval of any conditional use permit from the property line. Noise level to be certified by a licensed engineer.

Wind Turbine Projects: Many border the County, but only one project with three turbines in County (Project Name: Mason Wind LLC Perry, 2017) and the project predates the current wind ordinance.

Gratiot County, MI (adopted 5/5/2009)

6. Noise: Wind Energy Facilities shall not exceed 55 db(A) at the habitable structure closest to the wind energy system. This sound pressure level may be exceeded during short-term events such as utility outages and/or severe wind storms. If the ambient sound pressure level exceeds 55 dB(A), the standard shall be ambient dB(A) plus 5 dB(A).

Wind Turbine Projects: Pine River (2019), Gratiot (2011), Polaris (2020), Unknown Gratiot County (2020), Hancock County Wind Farm (2002), Beebe 1B (2014). Note that 55 dBA L_{max} is approximately equivalent to 45 dBA L_{1h} . I believe that Epsilon may have been involved with permitting some of these.

Beaver Township, MI (adopted 2018)

7. Sound Pressure Level. Utility-Scale WECS shall not exceed 45 dB(A) max (L) or 55 dB(C) (L) at the property line or lease unit boundary closest to the WECS and as measured at residences outside the property line or lease unit boundary. This sound pressure level may only be exceeded during short term events such as utility outages and/or severe wind storms. If the ambient sound pressure level

with the WECS not in operation exceeds 45 dB(A) or 55 dB(C), the standard shall be ambient sound pressure level plus five (5) for dB(A) or dB(C), respectively.

Wind Turbine Projects: None

Denmark Township, MI (Adopted 3/14/2014)

10) No Small Turbine may produce sound emissions in excess of 35 dBA at Measurement Points at any adjacent property line of a Non-Participating Parcel. During short-term events including but not limited to severe wind, snow or rain storms in the ambient sound pressure level exceeds 35 dBA, the maximum Sound Emissions permitted during the short-term event shall be the ambient dBA plus 5 dBAs.

c) Sound Emission Limitations: The following Sound Emission limitations shall apply to a Wind Energy Harvest Site.

Sound Emissions on Participating Properties shall not exceed 45 dBA.

Sound Emissions measured at the adjacent property line of Non-Participating Properties shall not exceed 35 dBA.

Low Frequency Noise measured at the adjacent property line of Non-Participating Properties shall not exceed 10 decibels (measured as dBC) above the pre-development Background Sound (measured as dBA).

This ordinance also describes measurement and documentation requirements. The measurement for background noise levels specifies that 10-minute intervals be used and specifically uses the term '10-minute maximum' in reference to wind speed.

Wind Turbine Projects: None. Turbines border the County up to the County lines to the north and east.

Jasper County, IN (adopted 11/2/2018)

Noise. A utility-grade wind turbine system shall not generate more than 35 dBA at a nonparticipating property line.

Wind Turbine Projects: None. Turbines border the County up to the County lines to the south.

Mason County, KY (adopted 9/30/2014)

1. No turbine shall be located so as to create a decibel level greater than 30 dBA at the property line of the parcel in which the turbine is located and also less than 50 dB(C) at the property lines of the parcel in which the turbine is located.

2. The application shall include a pre-construction sound study that establishes the ambient sound conditions in the proposed project area and surrounding the project area with a perimeter of one mile. The sound study shall be performed by



a certified independent acoustical engineer. The sound study must provide a description of the testing, sampling and process methodology used in determining the ambient measurement.

The ordinance also has requirements for post-construction monitoring and mitigation.

Wind Turbine Projects: None.

Sweetwater County, WY (adopted 1/11/2013)

k) Noise Management: Noise Immissions from the operation of a WECS shall not exceed:

forty-five (45) decibels on the dB(A) scale during the hours between 7 am and 7 pm MDT, and

forty (40) decibels on the dB(A) scale during the hours between 7 pm and 7 am MDT.

In addition, noise immissions shall not exceed fifty (50) decibels on the dB(C) scale during the hours between 7 pm and 7 am. Such noise immissions shall be measured at the nearest receiving property or lot line not owned or leased to the WECS owner/operator. Noise emissions shall be free of audible and inaudible tones that exceed a Tone to Noise Ratio greater than 10 for frequencies below 1000Hz or greater than 8 for frequencies of 1000 Hz and above.

Measurement requirements are also given.

Wind Turbine Projects: None.

Albany County, WY (adopted 11/10/2020)

General Nuisances. Minimize light, glare, heat, noise, vibration, odors, fumes, smoke, or other nuisances generated by the WECS Project or solar energy facility that may affect off-site property owners.

Noise for WEC Projects. Noise associated with WECS operation shall not exceed fifty-five (55) dBA as measured at any point along the common property lines between a non-participating property and a participating property.

This level may be exceeded during short-term events such as utility outages, severe weather events, and construction or maintenance operations.

This standard shall not apply along any portion of the common property line where the participating property abuts state or federal property.

Noise levels may exceed the fifty-five (55) dBA limit along common property lines if written permission, as recorded with the Albany County Clerk, is granted by the affected adjacent non-participating property.

A noise study shall be provided that documents noise levels at the property lines will meet the standards above. The study must be completed by a professional engineer licensed in the State of Wyoming.

Wind Turbine Projects: McFadden Ridge (2009), High Plains (2009) – Both predate the current wind ordinance.

Newton County, IN (6/1/2009)

8. Noise and Vibration.

At no point within two-hundred (200) feet of a primary residence may the sound pressure levels from a wind turbine exceed the following sound levels. Sound levels shall be measured with an octave band analyzer or sound level meter and associated filter manufactured in compliance with standards prescribed by the American National Standards Institute (ANSI). This standard shall supersede any noise standard(s) set forth in the existing Newton County ordinances as it applies to Wind Energy Conversion Systems.

Octave Bands in Hertz (Hz) per ANSI	Maximum Permitted Sound Level (in Decibels [dB]) measured 200 feet from edge of any primary residence
63	75
125	70
250	65
500	59
1000	53
2000	48
4000	44
8000	41

A formal noise study or noise analysis shall not be required with the application for a special exception. Notwithstanding the forgoing sentence, the Building commissioner staff may require a noise analysis following the receipt of noise-related complaints. In the event the Building Commissioner staff requests a formal noise study or noise analysis, the owner or operator shall produce said study or analysis in accordance with the standards noted above within sixty (60) days.

Wind Turbine Projects: A single 900 kW Turbine (North Newton School, 2012). Turbines border County to the southwest and southeast. Note that adding up all of the 1/1 octaves gives 62 dBA. Given the L_{max} is usually no more than 10 dB above the one-hour L_{eq} , this standard is relatively easy to meet.



Penn Forest Township, PA (2019)

r. Noise. The audible sound from the wind turbine(s) shall not exceed 45 A-Weighted decibels, and shall not exceed 45 C-Weighted decibels, as each is measured at the lot line of s “Residential Lot,” unless a written waiver is provided by the owner of such dwelling. **This requirement shall be a maximum noise level using a L_{max} standard, and not based upon an average.** The modeling of noise shall follow published standards for precision of the American Wind Energy Association.

The above maximum noise limits shall be reduced to 42 dBA and 42 dBA between the hours of 10 pm and 7 am. However, the noise limits shall not be reduced below 45 decibels where the applicant provides evidence that the current continuous background (ambient) sound level without the wind turbines would be higher than 42 decibels.

The ordinance also specifies measurement and recording requirements, as well as the requirement for post-construction monitoring every 2 years after construction.

Wind Turbine Projects: None